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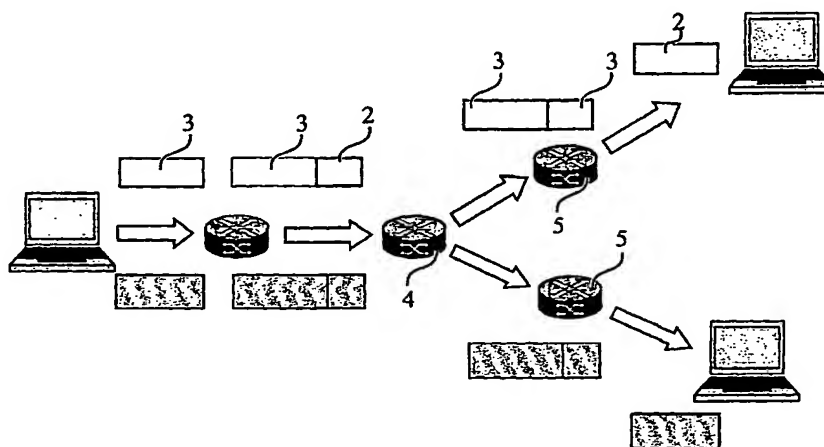
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(54) Title: OPTICAL DEVICE FOR SIMULTANEOUSLY GENERATING AND PROCESSING OPTICAL CODES

$$|T_{sk}(f)| = \prod_{v=0}^{V-1} \left| F_v \left(a_v f + \frac{S_{sk}}{N_k \tau} \right) \right| \quad (I)$$



(57) Abstract: The invention relates to an optical device, apt to generate and process optical codes at least one wavelength, comprising P inputs s , with $1 \leq s \leq P$, and $P \geq 1$, and N outputs k , with $1 \leq k \leq N$ and $N \geq 1$, characterised in that it is apt to simultaneously generate and process $N_e \geq 2$, made of C chips with time interval τ , with $C \geq 2$, characterised in that the transfer function $T_{sk}(f)$ from the input s to the output k satisfies the following formula: where: F_v is a transfer function of an optical filter, for $v=0, 1, \dots, V-1$, a_v is a constant value, for $v=0, 1, \dots, V-1$, S_{sk} is an integer number ($S_{sk} \in \mathbb{Z}$), N_k is a constant value, for $k=2, \dots, N$, and V is a positive integer number with $1 \leq V \leq \log_2 N$. The invention further relates to a set of optical codes, apt to be generated, in particular, by such optical device, and to networks and apparatus comprising such optical device.



For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.